The need for coordination to develop customized competitiveness in agrifood systems: lemon, pork, and dairy in Argentina

Received 23 December 2021
Revised 15 March 2022
17 May 2022
Accepted 17 May 2022

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Abstract

Purpose – The purpose of this research is to analyze the ability of agrifood systems to construct "customized competitiveness" strategies that can allow firms to meet the specific and constantly changing demands of foreign markets.

Design/methodology/approach – The research performs a comparative analysis of three case studies of agrifood systems in Argentina: lemon, pork, and dairy products. The authors obtained primary data from 79 semi-structured interviews with key persons in each agrifood system carried out online between March 2020 and February 2021. Secondary data was obtained from databases, academic studies, and reports from business associations and public agencies.

Findings – The authors find wide disparities in the development of customized competitiveness strategies between the studied agrifood systems (higher in lemon, lower in dairy products, and incipient in pork). The authors attribute the disparity to the varying degrees in which these systems are capable of coordinating their own actions and their interactions with State agencies.

Originality/value – The paper provides comparative evidence about the role of private coordination in the ability of agrifood systems to construct customized competitiveness strategies.

Keywords Coordination, Customized competitiveness, Agrifood systems, International insertion, Argentina

Paper type Research paper

1. Introduction

International food markets are experiencing rapid and profound transformations. The increasing sophistication of demand both in developed and developing countries

This study was conducted as part of IADB project "Private and public strategies for success in modern agri-food markets". The authors especially thank Ernesto Stein for his very valuable comments to earlier versions of this study. The authors also thank Piero Ghezzi, Romina Ordoñez, and Lina Salazar for valuable comments.

Funding: This work was supported by the Inter-American Development Bank. The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Inter-American Development Bank Group, its respective Boards of Directors, or the countries they represent.

Journal of Agribusiness in Developing and Emerging Economies
2044-0839
DOI 10.1108/JADEE-10-2021-0271

(Reardon *et al.*, 2009; Morris *et al.*, 2020), deeper public concerns about food safety (Humphrey, 2017), and a greater concentration of retail in large—and more demanding—supermarket chains (Henson and Humphrey, 2009), among other changes, provide emerging economies with new opportunities to improve their patterns of international integration but also impose on them strong challenges. Successfully facing those challenges requires that these economies' agrifood systems develop the ability to meet the demands of international markets, in particular customizing their products to their specific needs and requirements.

Based on modern views of competitiveness strategies that emphasize the need for "flexible specialization" (Piore and Sabel, 1984) and for building capacity, resources, and institutions at the micro and meso level to take advantage of externalities and agglomeration economies (Porter, 1990), Reardon and Flores (2006) and Ardila *et al.* (2019) emphasize that firms and governments in emerging economies need to adopt "customized competitiveness" strategies. These are strategies that seek to adapt to the rapid transformations of food markets by enhancing exporters' ability to customize their products and supply chains to the specific and constantly changing demands of target markets in terms of quality, safety, timing, traits, and compliance with public and private standards. They imply the adoption of innovative practices at the farm and across all value chain stages, including input sourcing, processing, exporting, and marketing, building efficient support services (for example, financial, transportation, and logistics services). They also imply the ability to interact with the State to guarantee an adequate supply of relevant public goods (Ardila *et al.*, 2019) in areas such as sanitary and phytosanitary control, R&D, extension services, quality infrastructure, and export promotion.

Given the number and variety of private players that take part in an agrifood system, achieving an effective coordination of their actions is critical to ensure the provision of those public goods. Numerous studies highlight public-private coordination, as well as coordination within the private sector, as key to the performance of business sectors (Doner and Ross Schneider, 2000). This is also true in agribusiness. For example, McDermott *et al.* (2009), attribute the good performance of the winemaking industry in Argentina's Mendoza province to a new institutional configuration led by COVIAR, a public-private organization. Similarly, Bruszt and Langbein (2014) posit that private and public-private coordination in Poland's dairy industry enabled it to meet European Union's safety standards upon access to that market in 2004 while access was a hurdle for the uncoordinated Rumanian dairy industry [1]. In this paper, we emphasize the role of coordination within the private sector as a condition that enables procuring the required public goods (Doner and Ross Schneider, 2000).

This study compares three agrifood systems in Argentina, those related to the lemon, pork, and dairy industries. We analyze the systems characteristics, functioning, export performance, and the progress they have made towards adopting customized competitiveness strategies. Also, we analyze the capability of each system to coordinate its actions [2]. The three agrifood systems vary in their international integration and in the degree to which they have adopted customized competitiveness strategies. The lemon system stands out among all three for its export performance and dynamism based on foreign sales—largely to OECD countries—of fresh lemons and industrialized products like essential oils and concentrated juice, being able to cater their exported products to the specific and changing requirements of foreign clients. The pork system has only recently started to focus on export markets. Although it still concentrates in just a few destinations—notably China—and in exports of pork without significant differentiating attributes, it has been capable of transforming its supply chains to meet these foreign markets' requirements. Lastly, Argentina's dairy system boasts a relevant track record of foreign sales dating back many years, although its exports have stagnated and are largely concentrated in commodities such

as powdered milk and whey. Adopting customized competitive strategies is still a challenge for this agrifood system.

The comparative analysis of our cases points to the coordination of private actors in the system as a key determinant of its ability to develop customized competitiveness strategies. On the one hand, the case of lemons shows a cohesive private sector sharing well-established strategic guidelines and the ability to clearly convey to public agencies their needs to ensure a proper supply of public goods. On the other hand, the dairy industry displays the opposite behavior, with a conflict-riddled, uncoordinated value chain that fails to develop another kind of international integration beyond commodity exports. Finally, the pork sector shows an interesting transition from a disjointed industry to a coordinated system whose players rally around a shared agenda that enables export growth, albeit still fledgling and limited to commodity exports.

As a lesson for policymakers, these findings suggest that in addition to public policies that promote agrifood systems' international competitiveness, institutional development policies that foster private coordination might be crucial to achieve the type of competitiveness that can support differentiation and value added in agrifood exports (Sabel and Jordan, 2015; Mutebi Kalibwani *et al.*, 2018; Malca *et al.*, 2021). While private coordination could potentially be used to pursue rent-seeking activities (Olson, 1982), this potential pursuit is not the focus of this investigation. Rather, we focus on the productive goals that coordinated action can set and achieve (Doner and Ross Schneider, 2000). We also note that our notion of coordination applies broadly to the diverse type of players in an agrifood system. Other notions of coordination apply more specifically to the vertical organization within the supply chain. We do not deal with that notion of coordination except for highlighting the differences in the extent of vertical integration across the agrifood systems we study.

The rest of this study is organized as follows. Section 2 discusses methodology. Sections 3, 4 and 5 describe, respectively, Argentina's lemon, pork, and dairy agrifood systems. Section 6 provides a comparative analysis of these three cases and concludes.

2. Methodology

We conduct a comparative case study (Yin, 2009) of three agrifood systems, each representing, respectively, systems associated with vegetal products (lemon), animal products (pork), and processed foodstuffs (dairy products). The selection of sectors was made to maximize diversity and coverage (theoretical sampling). This methodological design allows comparison between cases that present different characteristics and performance. Within each group, selected industries were chosen among those that displayed a good (average) export performance during the period 2016–2018 according to three quantitative indicators: growth relative to the period 2004–2006, share exported to OECD countries (members in year 2000), and share of differentiated-product exports. Among products of vegetal origin, the lemon industry stands out on account of its strong exports of fresh lemons and byproducts [3]. Among products of animal origin, the pork sector is particularly interesting because it is new to exports, quickly capturing a growing share of foreign demand [4]. Among processed foodstuffs, the dairy sector is interesting for its economic relevance and growth potential despite its stagnant recent export performance [5]. Further details about the industry selection process are provided in the online appendix.

For the case studies, we used primary and secondary information sources, combining quantitative and qualitative collection methods to ensure data validation. International trade data comes from the database BACI (*Base pour l'Analyse du Commerce International*) while Argentine trade data from Argentine Customs. Additionally, we consulted academic studies and reports from business associations and public agencies. Qualitative data come from each sector's information sources. We conducted semi-structured interviews with business

associations' leaders, officials and technicians from relevant government agencies, as well as senior managers at sectors' major exporting companies. Overall, we interviewed 79 people. Due to the COVID-19 pandemic and the travelling restrictions imposed by Argentina's national government, all interviews were carried out online between March 2020 and February 2021.

3. The lemon agrifood system

Over the past 25 years, worldwide demand for lemon and its industrialized byproducts has grown steadily, fueling the growth of global exports. In this scenario, Argentina has managed to become the world's largest producer of lemon and the largest producer and exporter of lemon byproducts. This agrifood system's dynamism and foreign market orientation has been based on its ability to meet the stringent and continuously increasing requirements of the most demanding countries and distribution channels.

3.1 Structure and customized competitiveness

Unlike its counterparts in the world's major lemon producing countries—Spain, Turkey, and the United States—the structure of Argentina's lemon sector is saliently defined by the relevance of its processing industry, which stems from the fact that it is the only lemon-growing country with a subtropical climate (Ploper *et al.*, 2009). On the one hand, the wind and rain impair the commercial quality (appearance) of harvested lemons, making them less appreciated for consumption as fresh lemons in foreign markets. In Argentina, 70% of the overall lemon output does not meet international quality standards, and so those lemons are used for industrial purposes (Ortiz and Aparicio, 2006) [6]. On the other hand, Argentina's climate and soil combination yields a juicier fruit, with a greater yield for industrial purposes. In 2019, Argentina's exports of industrialized lemon products—essential oils, concentrated juice, dehydrated skins—totaled USD 368 million, while its fresh lemon exports added up to USD 181 million. Combined, these exports grew 334% relative to 1995—a similar rate to that shown by the world market.

A core feature of this sector in Argentina is its high geographic and economic concentration, as well as its vertical integration. Lemon growing, packing, and processing operations are largely concentrated in Tucumán, a northern Argentine province, which accounts for 98% of Argentina's industrialized exports and 91% of fresh lemon exports [7]. Ninety percent of Tucumán's lemon output comes either from medium-sized growers, whose production areas range from 50 to 300 hectares (124–741 acres), or from large producers, with over 300 hectares (more than 741 acres) (Ministerio de Hacienda, 2018). Large exporters of fresh lemon are vertically integrated while the top nine exporters of lemon byproducts, who account for 94% of byproduct exports, also have primary production facilities to supply their industrial plants [8].

Coca-Cola has played a prominent role in the sector's development in Argentina (De Pablo Valenciano *et al.*, 2015). As lemon essential oil and concentrated juice are strategic raw materials to provide flavor and aroma for beverage elaboration, Coca-Cola pushed the production and industrialization of lemons in Tucumán Province by entering into several supply agreements with Argentina's largest citrus companies, professionalizing the entire sector with quality requirements that progressively drove the adoption of best practices. For over 30 years, Coca-Cola has purchased more than half of Tucumán's total output of lemon essential oil and concentrated juice. Other major clients for lemon essential oil include companies that manufacture scents and flavors for food, cosmetics, perfume, and cleaning products. In turn, companies that produce food additives use lemon juice, while pectin producers use dehydrated lemon skins to elaborate foodstuffs.

In recent years, processing companies, as well as producers and packers of fresh lemons, have adopted strategies that continuously seek to add value to their products in response to

the ever-changing needs of international buyers. On the one hand, processing companies have adopted technological innovations by investing in new machinery, and also invested in building research and development (R&D) capabilities to develop new, more differentiated byproducts geared to meet specific customer demands (Grupo Lucci, 2020; Zamora, 2014). The outcomes have led to emerging exports of specialty byproducts such as concentrated lemon oil, terpenes, non-concentrated juice, and dehydrated skins with seeds. Although these product innovations are few and incipient, they are allowing companies to strengthen their innovation capabilities since each product involves different challenges related to formulation, effective development, and commercialization. On the other hand, exporters of fresh lemon have adopted strategies to obtain fruit with better quality attributes as perceived by customers. To this end, they begun to grow "natural" lemons, or certified organic lemons—currently, 10% of total production accordingly SENASA (2019)—overcoming the challenges of adopting production practices that use fewer or no agrochemicals but still avoid fruit diseases. Processing companies, as well as producers and packers of fresh lemons, have adopted production and commercialization practices to ensure compliance with phytosanitary, safety, quality, traceability, and sustainability standards required by international markets.

3.2 Coordination

A public and private institutional fabric operates cohesively to buttress the agrifood system's participation in world markets. In the public sector, Tucuman's Obispo Colombres Agribusiness Experimental Station (EEAOC, for its Spanish acronym) is Argentina's benchmark R&D center in the lemon industry. The EEAOC plays a key role in the system by finding solutions and developing technological packages for growers, packers, and processors, conducting technical trials required by foreign markets, as well as by advising Argentina's sanitary authority (SENASA) on potential quarantine treatments in negotiations of phytosanitary protocols with foreign countries [9]. The EEAOC, SENASA, and private sector entities work in coordination to promote and monitor compliance with standards that address hygienic-sanitary aspects, phytosanitary protection, and good agricultural and manufacturing practices [10]. Although SENASA is the agency in charge of certifying exports, carrying out phytosanitary controls, and supervising traceability, it relies on the collaboration of EEAOC and other business associations to conduct these control activities. Other public entities that play a relevant role are Argentina's and Tucumán's export promotion agencies—the Argentine Agency for Investments and International Trade (AAICI) and the Institute for Productive Development (IDEP), respectively—who support companies with trade promotion and commercial intelligence, as well as with training. While these agencies' working relationships with the private sector date back several years, they have yet to formulate an effective strategy to enhance the international positioning of Argentine lemons by highlighting their distinctive attributes, such as juiciness or acidity. Figure 1 depicts the set of relevant players in the system and the main public goods each contributes to provide.

In the private sector, several business organizations work in a coordinated fashion, maintaining a relevant and permanent dialogue with the public sector to convey the agrifood system's needs for effectively responding to the rapid transformations of external demand. At the top of the system, the Argentine Northwestern Citrus Association (ACNOA) gathers all value chain players to set the system's strategic priorities. Three other private organizations also contribute by carrying out more focused activities. The Argentine Northwestern Phytosanitary Association (AFINOA) coordinates with SENASA the phytosanitary inspections required to certify lemons for exports and other necessary tasks to fight plagues and diseases. The Argentine Citrus Federation (Federcitrus) manages, alongside SENASA, the citrus traceability

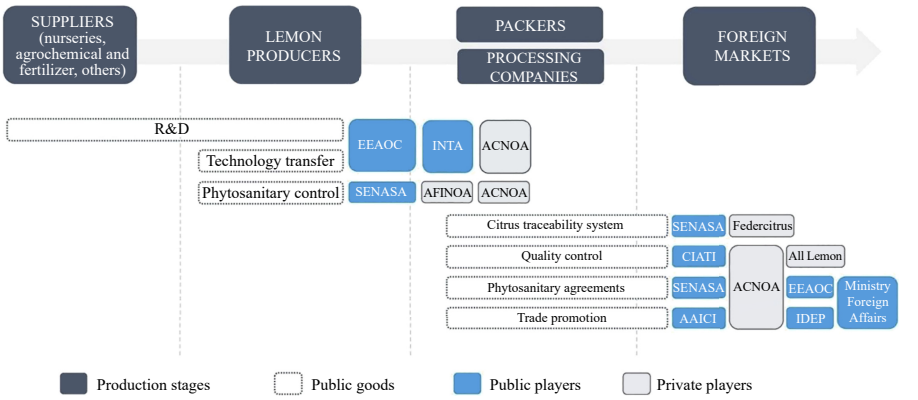

Figure 1.
Lemon agrifood system

system for lemon exports to the European Union, the United States, and other markets with similar quarantine restrictions. This traceability system stands out for the reliability assurance it provides to other countries' health agencies and to international clients. Finally, the Citrus Exporter's Chamber, known as All Lemon, was created by Argentina's largest fresh lemon exporters to launch a voluntary membership seal (*All Lemon*) that certifies the commercial (cosmetic) quality of exported lemons by means of a quality control system. Currently, 20 companies—jointly accounting for 75% of Argentina's fresh lemon exports—carry this seal [11]. According to Federcitrus' top manager: *"The fact that companies are committed to a minimum quality level beyond what is established by the national standard is something that raises the bar for both those who are in All lemon and those who are not. And it is an assurance that what is exported has a certain quality level"*. In this context, ACNOA coordinates the dialogue and actions with the public sector. In words of ACNOA's President: *"In ACNOA we have a technical team dedicated to the sector's competitiveness agenda (. . .) In Argentina, a lot depends on being able to influence the public sector or make it make the right decisions to provide us with the necessary competitiveness frameworks. It is very clear for us that the unity of the sector is key. It is a totally integrated sector. The great day-to-day challenge is to stay together. We have to be very institutional. We fight inside, but then we come out with a single discourse and a single strategy. This is what makes us strong as a sector"*.

In sum, the capability of the lemon agrifood system in Argentina to coordinate private actions and to interact with public agencies with clear messages about their evolving needs appears in this case as a key factor that has allowed the system to develop customized competitiveness strategies. The system has been capable of innovating and making the necessary adaptations to meet the specific and changing needs of foreign markets. Notwithstanding the success achieved so far, the continuous transformations of food markets imply new challenges. For example, in a more demanding international environment, the system needs to enhance the international positioning of Argentine lemons and their byproducts by showcasing their distinctive attributes. Also, the system should strengthen phytosanitary control, especially for fresh lemon exports in order to avoid suspensions affecting exports to major markets, like the one suffered by exports to the European Union in 2020 due to a citrus black spot [12]. The coordination accomplished so far should serve as a basis to successfully face the new challenges ahead.

4. The pork agrifood system

Worldwide pork consumption has grown about a third since the beginning of this millennium. Nearly half of that growth can be attributed to increasing consumption in China,

fueled by the sustained growth of the population's purchasing power and greater consumption of animal proteins. While China's increase in pork consumption over the past decades was accompanied by higher domestic output due to the sector's modernization, the new demand was largely satisfied through imports [13]. China's importing dynamism has been recently strengthened by an outbreak of African swine fever (ASF) in 2018 that caused the loss of nearly 30% of all pigs and 50% of China's pork output. This has brought a significant opportunity for Argentina's pork industry [14]. Traditionally focused on the domestic market, it has started to focus on exports with China as the main customer.

4.1 Structure and customized competitiveness

The recent exporting performance of Argentina's pork sector has been outstanding. While during the first 15 years of the 21st century total pork exports did not exceed USD 5 million a year, a significant growth momentum was reached in 2019 when the Chinese market opened up, accounting for 90% of total exports [15]. The expansion of the ASF outbreak into several European Union countries in 2020, compounded by logistic hurdles caused by the COVID-19 pandemic in several traditional pork-producing countries, helped Argentine pork exports to rise in that year to a record high of USD 65 million. The potential for pork exports is high, as Argentina is a net exporter of corn, the mainstay of swine feeding.

Argentine pork exports traditionally consisted of low-value byproducts and were carried out by meat packers whose core business was sausage and salted meat production for domestic consumption. Currently, exports consist largely of fresh meat. The shift from byproduct exports to meat exports implied the need to introduce significant improvements along the chain, including both primary production and industrial processing. Moreover, the quality standards of Argentina's pork sector are less demanding than in other markets. Primary production is highly fragmented, consisting mostly of small farm producers and only some large integrated producers, while only the leading meat packers own farms (Ministerio de Hacienda, 2019) [16]. For the most part, meat packing plants have not yet incorporated advanced technologies and practices, and the available infrastructure, especially in terms of refrigerating capacity at both meat packers and specialized companies, is rather limited.

4.2 Coordination

Before the emergence of the new opportunity opened up by the jump in China's demand, Argentina's pork agrifood system featured the coexistence of different players pursuing divergent goals, particularly private associations with a scope limited to the part of the value chain they each represented—typically primary producers or industrial processors. In several opportunities, the interests of these organizations antagonized, as with the tension that typically exists between primary producers and meat packers over pork prices. Also, the sector system's small size contributed to a limited ability to influence policymakers. By contrast, the new opportunity led the agrifood system to perform a number of actions, such as participating in market access negotiations, providing support information for phytosanitary protocols, helping meat packers to comply with new requirements for obtaining export plant permits, and establishing mechanism to share good practices, that can be viewed as the incipient construction of a customized competitiveness strategy. While these efforts are largely geared towards meeting China's demand requirements, they are laying the groundwork for other markets as well.

These changes have become possible as a result of the emergence of new players that, since their inception, pursued an export-oriented vision and realized that they needed to lead the coordination of this agrifood system towards meeting foreign market demands. In words of the general manager of Argenpork, an export consortium created in 2016 by twelve

high-productivity primary producers with export experience in agricultural commodities, "*in the last 10 or 15 years, the profile of primary producers has changed as a significant number of people with experience in other sectors and a different vision of the business entered the sector*". In particular, Argenpork has played a key role in the coordination improvements achieved by the sector. Argenpork is Argentina's leading pork exporter featuring export growth from barely USD 2 million in 2017 to USD 19 million in 2020. This consortium was created to make Argentine pork recognized as a quality exporter in the world's major markets.

Argenpork became the *de facto* sector's representative, interacting on its behalf with key State agencies. In particular, in 2017 the consortium worked closely with SENASA to advance negotiations with China at a faster pace. Argenpork contributed in several ways to SENASA, who viewed the consortium as its counterpart in the private sector. First, it effectively conveyed that accessing China's market should become a priority and that Argentine government officials should not get distracted with other negotiations that could wait for later. Also, even if negotiations were locked for pork byproducts—due to higher sanitary risks negotiations for these products are more complex—Argenpork clearly stated that negotiations with China should proceed securing market access for pork meat.

During the period 2017–19, Argenpork also provided SENASA with all the information required to advance technical issues in the negotiations, such as identifying the products, amounts, and quality levels that the sector could actually supply in case market access was granted. Argenpork had information on Chinese buyers' needs as a result of their own marketing efforts. By gradually becoming a key player in Argentina's pork exports, it entered into trading agreements with meat packers, encouraging them to move forward on the required permit processes. Argenpork contributed to identifying and hiring consultants who specialized in plant certifications for exports, so that they would train meat packers' employees to fill out the forms and the files that SENASA had to submit to China. It also helped to ensure that all sanitary requirements were met—for example, it funded the necessary lab tests carried out by the Argentine Pork Producers' Association (AAPP), a nationwide organization, to prove that Classical swine fever (CSF) had been eradicated in Salta Province [17].

With China's market opened and consolidated, the sector's goal is now to coordinate efforts to provide guidance to the government's strategy of market opening negotiations. Based on the acquired experience, AAPP led the creation of the Argentine Pork Exporters' Group (GEPA), a working group formed by Argenpork and leading meat packers that have started export businesses to work and support the government in international negotiations and share best practices within players in the agrifood system. According to the manager of GEPA, "*GEPA was born from SENASA's request to the private sector, which echoed similar requests from other government agencies, to unify the voice of the private interlocutor in international negotiations (. . .). SENASA could not identify from the individual requests what the common needs were*". Currently, GEPA works closely with SENASA and Argentina's representatives in target markets to pave the way for future market openings. In 2020, GEPA managed to build consensus among its members for a list of 15 markets for international negotiations, characterizing them as high, medium, and low priority targets. This list was submitted to the corresponding authorities, and it became a great tool for effective interactions with the public sector. Additionally, GEPA offers productive advice to meat packers, so that they obtain (and maintain) plant certifications, as well as marketing support for the adoption of mechanisms to meet clients' labeling demands. Figure 2 below depicts the map of relevant players in the system and the main public goods each contributes to provide.

In short, in just a few years, Argentina's pork agrifood system initiated a process of building customized competitiveness albeit still confined to the Chinese market. The progress made was brought about by the driving force of foreign demand, as well as by Argenpork's capability and vision. The consortium successfully led the system towards building the

capabilities to meet the requirements of that market, which has also laid the groundwork for a future expansion to more markets with more differentiated products.

5. The dairy agrifood system

Argentina holds a relevant place in the world as a dairy producer and exporter. Although the European Union, New Zealand, and the United States are the global leaders in dairy exports, Argentina is still the largest dairy exporter in Latin America and the sixth largest exporter worldwide. However, while the industry's global exports grew 160% in volume between 1999 and 2019, Argentine exports in the same period remained stagnant, consisting mostly of dairy commodities. The lack of export dynamism is largely determined by an agrifood system with persistent conflicts between producers and manufacturers over the price of raw milk, which hinders the formulation and pursuit of an agenda to support a better international trade performance.

5.1 Structure and customized competitiveness

Milk producers and manufacturers are part of an industrial fabric made up of companies with different technological and productivity levels. A large share of these players—especially in the primary sector—still operate with low productivity and outdated production practices. At the other end of the spectrum, some dairy manufacturers operate with modern technologies (highly automated processes, the use of advanced drying, pasteurization, and refrigeration techniques, and new packaging technologies). However, even among the latter companies, internalization strategies rely on dairy commodities such as powdered milk, whey, and highly standardized cheeses. Just a few companies have pursued internationalization strategies based on product differentiation.

The relation between producers and dairy manufacturers is shaped by their transactions of raw milk. Milk quality cannot be assessed on sight and varies daily as a function of factors like the weather and cows' feeding and health. The most relevant quality components are milk fat and protein content, which influence industrial yield, and the hygienic and sanitary condition of the milk, which affects its organoleptic features. Typically, dairy manufacturers have better information than dairy farms about milk quality, as they have their own labs to analyze the properties of the milk they receive on a daily basis. This information asymmetry makes transactions even more complex, as it fuels distrust among the parties as well as tensions over the distribution of rents.

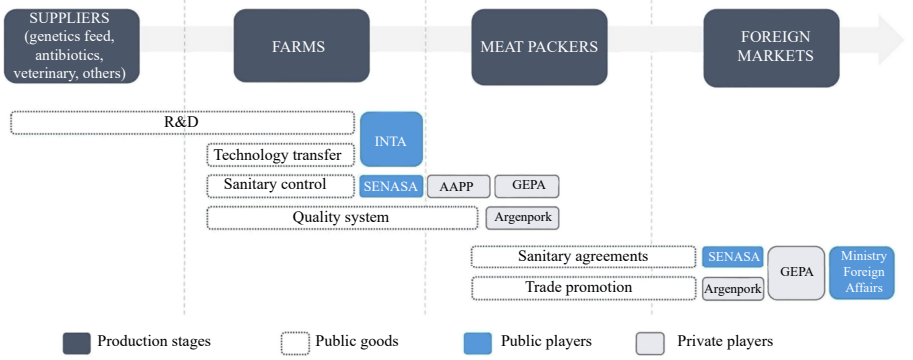

Figure 2.
Pork agrifood system

5.2 Coordination

It is common for countries to regulate the commercialization system to remedy this asymmetry. However, an effective regulation has not yet been achieved in Argentina. Currently, deficiencies in the marketing system stand as the key source of conflict between dairy farmers and manufacturers (Barbero and Gutman, 2008; Bisang *et al.*, 2008). In particular, farmers complain about the lack of transparency in transactions (Petrecolla, 2016), as manufacturers do not specify the criteria they used to set milk prices. This discourages high-quality milk production. Milk quality improvements require larger expenses, such as the use of concentrated feed to increase fat and protein content, but producers find no incentives to incur those expenses if they do not expect to be rewarded. According to the interview with a milk producer and representative of a producer association, *"Today we are paid per liter of raw milk. Each industry negotiates a price per liter with each producer or group of producers (. . .) It is more profitable to have more liters rather than more quality because dairy manufacturers do not recognize quality. When I talk to my nutritionist and she suggests a change in the cows' diet to have more liters and less fat and protein content, I say go for it".*

The continuous conflict and distrust between dairy farmers and manufactures has so far prevented the agrifood system from helping firms build export strategies that target more sophisticated markets with differentiated products that can meet more specific and demanding requirements of world markets. In particular, the system as a whole has been unable to convey a clear message to State agencies about its needs and priorities or to engage in fruitful interactions with them to obtain the solutions needed to improve the type and magnitude of their participation in global markets. In other words, the inability to build consensus among stakeholders on an agenda of relevant actions has prevented so far the construction of customized competitiveness.

The underprovision of relevant public goods is salient in this industry. One example involves the negotiation of safety protocols. While Argentina is capable of ensuring compliance with the mandatory food safety requirements of foreign markets (as in the other two sectors, the national health authority—SENASA—plays an important role in monitoring and controlling the system), it still needs to work on how to meet other safety concerns. For instance, in the case of *dulce de leche* (caramelized milk or milk jam), the agrifood system has failed to raise in the government's negotiation agenda the need to review the protocol with the European Union, as it bans the use of sorbate, a preservative used in other foodstuffs, although, in controlled amounts, it is safe for human consumption. Also, it has yet to develop more advanced traceability systems that enable the introduction of information about products' differentiating attributes that can better meet foreign clients' various concerns and growing technical requirements. An emerging example of a move in this direction involves an incipient project that would enable embedding data on product processes and attributes developed through public-private collaboration.

Another example of the need for public policy involves trade policy. Argentina lacks preferential trade agreements with major export destinations outside Mercosur. This places Argentina in an unfavorable position vis-à-vis its international competitors. Such is the case of China's powdered milk market, where Argentina has to pay a 10% tariff, while New Zealand is exempted as a result of a free trade agreement between both countries. Conducting trade negotiations is limited by Mercosur, a customs union that curtails the ability of participating states to pursue bilateral agreements. However, under the same constraint, Uruguay was able to negotiate a quota of 4,000 tons in 2019 to enter China without tariffs, a low quota relative to Uruguayan milk powder exports (159,000 tons in 2019) but a first step to improve access to the Chinese market.

Yet another example involves the quality and availability of logistics and transportation services. While these services satisfy the basic needs of the agrifood system, investments in infrastructure are still required. Raw milk must be transported daily, but significant problems

arise when it rains, as trucks find it hard to reach dairy farms due to the fact that unkempt dirt roads prevail in these areas. Argentina's lacking investments in road infrastructure makes it difficult for Argentine companies to fulfill their commercial commitments.

Finally, the dairy industry in Argentina could benefit from a trade promotion strategy. Historically an exporter of dairy commodities, the sector's trade promotion activities have been mainly limited to traditional actions such as attending international trade fairs or organizing trade missions. However, the sector lacks an international insertion strategy that can leverage Argentine dairy products' quality and long track record in the industry with more differentiated offerings. Such a strategy would require the development of a sector brand that seeks international recognition for Argentine dairy products, as well as strengthening companies' exporting capabilities with technical assistance on several areas, including strategic planning, quality, product design, and communication.

At the core of the dairy agrifood system's failure to secure these public goods, our findings point to the system's fragmented institutional configuration and ensuing inability to coordinate an agenda of relevant actions. This fragmentation is found in its primary sector, where no nationwide association represents all dairy farms, and in its industrial sector, which also lacks a united national representation. Indeed, the agrifood system as a whole does not feature a comprehensive forum for the interaction and collaboration of its members, so that they can work out their differences and work together towards a shared agenda. The Foundation for the Promotion and Development of Argentina's Dairy Value Chain (FunPEL) has provided the only space for interaction between producers and manufacturers. In words of FunPEL's president, "*FunPEL presents a suitable environment for the exchange of opinions and respect for ideas and proposals. Due to these features, a large part of the sector identifies FunPEL members as referents, or trusts the foundation*". However, its weak institutional consolidation, as well as its lack of technical staff, have curtailed FunPEL's ability to coordinate actions across the value chain and to reach consensus around a strategy for building customized competitiveness. Figure 3 presents the key system's players and the main public goods each contributes to provide.

Despite its pending challenges, FunPEL has become the most effective counterpart for the public sector to create some recent public goods for this industry, including an information exchange platform for dairy farms and processing industries about raw milk payments, which, albeit in a limited amount, has brought more transparency to transactions among private players and a technical analysis center that has improved the sector's access to information for decision making. Both tools have provided more information to dairy farmers and manufacturers to plan their production and investment choices. Argentina's dairy agrifood system produces quality raw milk at competitive prices and operates in an

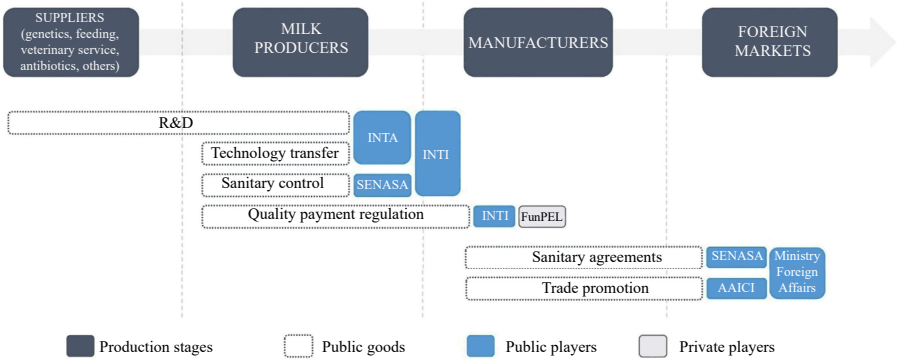

Figure 3.
Dairy agrifood system

environment of public and private institutions that are capable of providing the necessary instruments to achieve a better international insertion with a greater weight of differentiated products. To the extent that it manages to improve its coordination capabilities, there is a dense network of dairy firms apparently capable of following customized competitive strategies that may seize the open opportunities.

6. Discussion and conclusions: a comparative analysis of agrifood systems in Argentina

While all three agrifood systems examined here appear to have underlying conditions for export development, they have achieved different degrees of progress in their advancement toward building customized competitive strategies (Reardon and Flores, 2006; Ardila *et al.*, 2019). The dissimilarities are manifest, first and foremost, in their individual players' practices (e.g. productive or commercial)—some still largely grounded in traditional schemes. Second, they become apparent in the quality and availability of public goods, which do not always provide adequate support for the adoption of strategies capable of customizing products to the specific and constantly changing demands of foreign markets. The comparison of the three cases also shows wide disparities in these systems' coordination capabilities to build and execute an agreed-upon agenda that promotes, alongside relevant public agencies, their customized competitiveness.

6.1 Performance and coordination

Among the three studied sectors, Argentina's lemon agrifood system shows the strongest export dynamism and the greatest progress towards customized competitiveness. This system features the most pronounced export orientation, as well as diversity in terms of destinations and type of clients—although Coca-Cola still concentrates a large share of essential oil foreign sales. Despite the commercial threat posed by competitors like South Africa in fresh lemon, the sector's exports continue to grow. Additionally, this agrifood system's consolidation and maturity enables companies to rise to new challenges associated with greater export differentiation, such as the development of "natural" fresh lemon and innovations in industrialized specialties.

In turn, Argentina's pork agrifood system displays an emerging yet vigorous reorientation towards an export focus on China. Despite the fact that it still only exports commodities, its exporting drive is fueling significant changes in this sector, which range from building better sanitary control systems and commercial quality guarantees to a greater professionalization in business management. This system is also developing new capabilities to set priorities in its international agenda, such as those referring to market openings.

Lastly, Argentina's dairy agrifood system shows poor export dynamism and lack of advancement towards customized competitiveness. While consolidated, this system's international performance has been stagnated for over a decade, largely confined to commodities like powdered milk, whey, and rather undifferentiated cheeses.

The three agrifood systems also feature significant disparities in their coordination capabilities. In lemon, a private organization (ACNOA) can set and build consensus around an agenda for the entire agrifood system. This organization works on the system's most important agreements and strategic goals, thus serving as its liaison with public agencies for strategic issues regarding international competitiveness. Other private entities have more specific missions and objectives but they are all aligned and work cohesively with ACNOA. Instead, in the case of pork, there is no organization linking the primary and secondary sides of the value chain. In fact, its fragmented configuration gave way to the creation of Argenpork, an association that assumed a coordinating role to change the orientation

Argentina's pork industry towards foreign markets. Similarly, the country's dairy sector also has a fragmented institutional configuration, with a fledgling attempt to coordinate efforts via a new foundation, FunPEL, that has made incipient contributions to building consensus in the system and working with the public sector on specific competitiveness-related issues.

Although understanding the determinants of agrifood systems' ability to coordinate their actions is beyond the scope of this paper, a salient feature to highlight is that the three systems examined here display stark differences in their levels of vertical integration, as well as in their economic and geographic concentration. The lemon value chain stands out as highly vertically integrated: packing and manufacturing plants source a large share of their lemon from professionalized farms they own. Conversely, both meat packers and dairy manufacturers are mainly supplied by third-party farms characterized by fragmentation and the need for technological investments and the adoption of better production practices. In addition, the lemon sector shows substantially higher levels of economic and geographic concentration in both production and processing than the other two sectors. The greater vertical integration observed in the lemon agrifood system, as well as its economic and geographic concentration, have probably favored this systems' greater ability to coordinate. Table 1 (top panel) summarizes the key features of the three agrifood systems discussed here. The bottom panel summarizes, for each system, the extent of creation and provision of public goods, discussed next.

6.2 Coordination to build customized competitiveness

The lemon agrifood system's greater coordination capability shows in several ways. In the realm of private sector efforts, it has led to the creation of All Lemon, an organization noted for the effectiveness and continuity of the quality control system that supports its quality certification. All Lemon has also become the sector's face in quality and marketing matters. The other two sectors have yet to build quality assurance systems with such a scope and sophistication.

The lemon system's greater coordination also appears to have been crucial to attract State agencies' attention and resources. For instance, as companies need to meet the increasingly demanding technical requirements of foreign markets, a significant challenge lies in cooperating with SENASA so that it can provide effective support, monitoring, and oversight

	Lemon	Pork	Dairy
Main Variables			
1. Progress towards customized competitiveness	High	Developing	Low
2. Coordination ability	High	Developing	Low
3. Vertical integration	High	Low	Low
4. Geographic concentration	High	Low	Low
Public goods created or secured			
1. Research and development	High	Low	Low
2. Extension services	High	Intermediate	Intermediate
3. Sanitary and phytosanitary control	Advanced (Integrated traceability system)	Basic (recent advances)	Basic
4. Integrated quality control system	Yes (All Lemon)	Partial	No
5. Regulation over pay for quality	Not relevant	No	Recent but insufficient improvements
6. Sanitary or phytosanitary agreements	Yes	Incipient	Yes (specific needs)
7. Trade promotion	Intermediate	Low	Low

Table 1.
Summary table

systems that can address all kinds of clients' concerns and requirements and also be used as a platform to achieve greater differentiation. In the case of lemons, SENASA and Federcitrus (an organization aligned with ACNOA's goals) have built and co-manage one of Latin America's few integrated traceability systems [18], whose reliability has facilitated this public agency's negotiations of sanitary protocols with other countries. The lemon sector is currently considering merging this system with the commercial quality control system managed by All Lemon. Instead, in Argentina's pork industry, the private sector's cooperation with SENASA has barely focused on guaranteeing a sanitary control system that meets the most basic foreign requirements—e.g. with the AAPP working with SENASA to eradicate CSF in Argentina's northern area. As regards the Argentine dairy sector, while there is a control system in place to comply with basic traceability requirements, the sector has failed to develop a more advanced traceability system—a public-private proposal collaboration has proven unable to move beyond an embryonic state—that would enable companies to introduce differentiating attributes into their products by including information on processes and product attributes.

Another significant example refers to research and development as well as technology transfer efforts. Argentina has several public research agencies with a renowned and long track record. In the lemon agrifood system, both INTA (the National Institute for Agricultural Technology) and especially Tucumán's EEAOC have a strong presence, and their technological solutions and packages—developed on the basis of field tests and research studies—are greatly appreciated by both growers and lemon packers. For example, among other relevant tasks, EEAOC has developed more resilient rootstock varieties, designed effective packing systems for exports, and advised SENASA on quarantine treatments and risk mitigation systems. An ACNOA representative sits at EEAOC's board to convey the sector's R&D priorities and needs. EEAOC has played a central role in the development of the lemon agrifood system's ability to meet the continuously changing demands of foreign markets. In both the pork and dairy industries, INTA plays a significant role in technology transfer to the primary sector, providing technical assistance and training to small producers. For instance, INTA has supported smaller pig farms to shift from outdoor breeding to wind tunnel installation, and it assists dairy farmers by disseminating the best practices in their field. At the same time, it researches new technological solutions and packages to improve farmers' yields in both these sectors. Still, its efforts have not had the impact that both INTA and particularly EEAOC had on the lemon agrifood system's development.

Another public policy area where the systems' coordination ability proves key is the agenda for sanitary and phytosanitary openings. Regarding lemons, Argentina has recently managed to reopen the US market as well as to open China's and India's markets. The lemon sector interacts and collaborates with Argentina's Ministry of Foreign Affairs and SENASA, submitting its priorities for market negotiations. Concerning pork, Argentina has only recently gained access to the foremost export market, China, and solely for fresh meat—not yet for byproducts. As a result of Argenpork's efforts and its collaboration with the national pork association (AAPP) to build GEPA, Argentina's agenda now includes the opening of other key markets such as Mexico, Singapore, Viet Nam, and Uruguay. Instead, when it comes to dairy products, access to foreign markets is often ensured by just complying with domestic mandatory food safety standards but there are specific negotiation needs—e.g. the use of sorbate in *dulce leche* exports to the European Union—that have yet to be raised to the government's negotiation agenda.

In other areas, none of the three agrifood systems has achieved an advanced cooperation level with relevant public agencies. Such is the case of trade promotion. While AAICI and other provincial agencies have supported the sectors' trade promotion efforts subsidizing their presence at international fairs, they have not played a relevant role in the formulation and pursuit of an international expansion strategy for these sectors.

Lastly, the dairy sector's lack of coordination is clearly manifest in the need to regulate the parameters of the raw milk commercialization system in order to make it more transparent and to reward higher fat and protein content. This unresolved issue has largely determined the lack of cohesion between primary and secondary producers in this industry for years, with this agrifood system failing to find a consensual solution that can be clearly communicated to regulatory authorities. The role of FunPEL corroborates this view. This small foundation—the only organization that gathers both dairy farms and manufacturers—has become the most effective counterpart for the public sector to make any significant progress—however partial—such as the creation of the technical analysis center and the information exchange platform for private players. Nonetheless, its lack of institutional consolidation, as well as its scant financial and human resources hase curtailed its scope of action thus far.

Overall, these examples point to the importance of the agrifood system's coordination capabilities to provide the system with needed support to develop customized competitive strategies. Not only does coordination appear to be crucial to agree on the system's own collective actions, such as creating a quality control scheme, but also it does so to secure from State agencies public goods that are critical for companies' ability to meet the evolving and ever more stringent requirements of foreign markets.

6.3 Conclusions

This paper compares three agrifood systems in Argentina, those related to the lemon, pork and dairy industries. These industries display wide disparities in their export dynamism, which we find related to their heterogeneous ability to build strategies that can meet the specific and continuously changing demands of foreign markets. In addition, we find that private coordination appears to be crucial to construct an agenda of private and public efforts to develop customized competitiveness. In this regard, private coordination in the lemon agrifood system is saliently strong; it is weak in the dairy system while it is incipient in pork. In particular, coordination enables fertile interactions with public sector agencies, allowing sectors to voice their specific requirements for public goods.

From a public policy perspective, it is interesting to note that the performance of State agencies does not hinge only on their own capabilities and financial resources. On the contrary, their commitment of efforts and financial resources also seems to depend on the availability of reliable private counterparts with clearly defined goals and the consensus of their respective sectors. In this regard, in addition to focusing on the public policy issues discussed earlier, the State should find ways to work with the private sector to secure consensus and coordination.

Notes

1. Other papers focused on Latin American industries that underscore the role of public-private collaboration are Arbeláez *et al.* (2012), on Colombian flowers, Sánchez *et al.* (2011), on Argentine rice, and González *et al.* (2021), on Argentine lemon and Uruguayan beef.
2. Although it is also relevant to understand the impacts of an agrifood system's type of international integration on the prevalence of small firms, workers, and the environment, studying those impacts is not the focus of this work and is left for future research.
3. Among vegetal products, the lemon complex is among those with highest export growth (106%) between 2004–2006 and 2016–2018, highest share exported to OECD countries (75%), and highest share of differentiated good exports (98%).
4. Among animal products, the pork complex exhibits the highest export growth (1,645%) between 2004–2006 and 2016–2018 but no exports to OECD members or exports of differentiated products.
5. Among processed foodstuff, the dairy complex displays low export growth (18%) between 2004–2006 and 2016–2018, a low share of exports to OECD members (3%), and a low share of differentiated products (41%).

6. In other lemon processing countries, the output share for industrial purposes ranges from 15% (Spain and Italy) to 25% (the United States) (USDA, 2020).
7. Own calculation based on information available in IDEP (2020) and Argentina's customs database.
8. The main lemon packers and industrializers are Argentine-owned, except for Citromax, one of the largest processors, which is U.S. owned. The other eight largest lemon processors are SA San Miguel, Citrusvil, Argenti Lemon, Vicente Trapani, FGF Trapani, La Moraleja, Ledesma, and Cooperativa de productores citrícolas de Tafí Viejo.
9. All the players in the citrus value chain make a mandatory financial contribution established by a provincial law to fund EEAOC's operations. While EEAOC's technical leadership remains unchallenged by the private sector, the relationship between the two has been strained since 2015 due to differences between EEAOC and Tucumán's largest citrus companies about the size of the contribution.
10. The National Institute for Agricultural Technology (INTA) and the Center for Industrial Research and Technical Assistance (CIATI) are R&D centers that can conduct some of the technical trials required by foreign markets.
11. The private sector is presently considering a potential merger of All Lemon's quality control system with the lemon traceability system.
12. Citrus black spot is a disease that impairs the appearance of lemons—with small black dots on their skin—but does not jeopardize their safety for human consumption. The 2020 suspension had only a minor impact on exports as it was imposed at the end of the exporting season. By the beginning of the 2021 exporting season, the suspension had been removed as a result of a new agreement with the EU sanitary authorities about how to strengthen phytosanitary control.
13. An analysis of Chinese consumer preferences over pork consumption can be found in Ma *et al.* (2017).
14. A caveat is relevant as the opportunity enjoyed by Argentine pork is contingent to the potential recovery of the production of China and others markets affected by ASF.
15. The expansion of exports started in 2017 driven by the opening of Russia's market as a result of the embargo imposed by that country on its traditional suppliers.
16. This feature contrasts with a global trend towards vertical integration in pork production (see Dong *et al.*, 2020).
17. A detailed work explaining the differences between ASF and CSF can be found in Schulz *et al.* (2017).
18. This topic is addressed by Hallak and Tacsir's paper in this special issue.

References

Arbeláez, M.A., Meléndez, M. and León, N. (2012), "The emergence of fresh cut-flower exports in Colombia", in Sabel, C., Fernández-Arias, E., Hausmann, R., Rodríguez-Clare, A. and Stein, E. (Eds), *Export Pioneers in Latin America*, BID and Cambridge, Washington, DC, pp. 69-100.

Ardila, S., Ghezzi, P., Reardon, T. and Stein, E. (2019), "Modern agrifood markets: fertile ground for public-private cooperation", in Moreira, M.M. and Stein, E. (Eds), *Trading Promises for Results: what Global Integration Can Do for Latin America and the Caribbean*, Inter-American Development Bank, pp. 257-277.

Barbero, M.I. and Gutman, G.E. (2008), "La industria láctea ante el proceso de reestructuración de la economía Argentina en la década de 1990", *Estudios Sociales*, Vol. 16 No. 31, pp. 125-163.

Bisang, R., Porta, F., Cesa, V., Campi, M. and Fernández Bugna, C. (2008), *La Cuestión Distributiva en la Trama Láctea Argentina: Una Aproximación al Reparto del Excedente de Explotación, Documento de proyecto, Comisión Económica para América Latina y el*, Caribe (CEPAL), Santiago.

Bruszt, L. and Langbein, J. (2014), "Strategies of regulatory integration via development. The integration of the polish and Romanian dairy industries into the EU single market", in Bruszt, L. and McDermott, G. (Eds), *Leveling the Playing Field: Transnational Regulatory Integration and Development*, Oxford University Press, pp. 58-79.

De Pablo Valenciano, J., Battistuzzi, M.A.G. and Gómez, A.C. (2015), *Mapas de Competitividad Internacional del Limón (2002-2010). Análisis y Comparación del Modelo Español*, Editorial Universidad de Almería, España.

Doner, R. and Ross Schneider, B. (2000), "Business associations and economic development: why some associations contribute more then others", *Business and Politics*, Vol. 2 No. 3, pp. 261-288.

Dong, D.D., Moritaka, M., Liu, R. and Fukuda, S. (2020), "Restructuring toward a modernized agro-food value chain through vertical integration and contract farming: the swine-to-pork industry in Vietnam", *Journal of Agribusiness in Developing and Emerging Economies*, Vol. 10 No. 5, pp. 493-510.

González, A., Hallak, J.C. and Tacsir, A. (2021), "Quién tracciona la estrategia sectorial para la inserción internacional? Desafíos de coordinación post-COVID-19 en cadenas agroindustriales de América Latina", *Integración Y Comercio*, Vol. 47, pp. 158-179.

Grupo Lucci (2020), "Reporte de sustentabilidad 2019", available at: http://grupolucci.com.ar/wp-content/uploads/2020/07/Reporte-Sustentabilidad-2019-full.pdf.

Henson, S. and Humphrey, J. (2009), *Los Efectos de las Normas Privadas Relativas a la Inocuidad Alimentaria*, Organización de las Naciones Unidas para la Alimentación y la Agricultura (FAO) y Organización Mundial de la Salud, Rome, Geneva.

Humphrey, J. (2017), *Food Safety, Trade, Standards and the Integration of Smallholders into Value Chains, IFAD Research Series*, International Fund for Agricultural Development, Rome.

IDEP (2020), *Sector Citrícola en Tucumán*, Instituto de Desarrollo Productivo de Tucumán. Área Inteligencia Comercial, available at: https://idep.gov.ar/webidep/wp-content/uploads/2021/06/Sector-Citricola-en-Tucuman.pdf.

Ma, X.Q., Verkuil, J.M., Reinbach, H.C. and Meinert, L. (2017), "Which product characteristics are preferred by Chinese consumers when choosing pork? A conjoint analysis on perceived quality of selected pork attributes", *Food Science and Nutrition*, Vol. 5, pp. 770-775.

Malca, O., Bolaños, J.P., Rubio Donet, J.L. and Acedo, F. (2021), "Export market orientation and export performance in emerging markets: insights from the Peruvian agri-export sector", *Journal of Agribusiness in Developing and Emerging Economies*, Vol. ahead-of-print No. ahead-of-print, doi: 10.1108/JADEE-12-2020-0308.

McDermott, G., Corredoira, R. and Kruse, G. (2009), "Public-private institutions as catalysts of upgrading in emerging market societies", *Academy of Management Journal*, Vol. 52 No. 6, pp. 1270-1296.

Ministerio de Hacienda (2018), *Informes de Cadenas de valor. Limón. Secretaría de Política Económica. Subsecretaria de Programación Microeconómica*, Ministerio de Hacienda, available at: https://www.argentina.gob.ar/sites/default/files/sspmicro_cadenas_de_valor_limon.pdf.

Ministerio de Hacienda (2019), *Informes de cadenas de valor. Carne Porcina. Secretaría de Política Económica. Subsecretaria de Programación Microeconómica*, Ministerio de Hacienda, available at: https://www.argentina.gob.ar/sites/default/files/sspmicro_cadenas_de_valor_porcina_1.pdf.

Morris, M., Sebastian, A. and Perego, V. (2020), *Future Foodscapes: Re-imagining Agriculture in Latin America and the Caribbean*, World Bank, Washington, DC.

Mutebi Kalibwani, R., Twebaze, J., Kamugisha, R., Kakuru, M., Sabiiti, M., Kugonza, I., Tenywa, M. and Nyamwaro, S. (2018), "Multi-stakeholder partnerships in value chain development: a case of the organic pineapple in Ntungamo district, Western Uganda", *Journal of Agribusiness in Developing and Emerging Economies*, Vol. 8 No. 1, pp. 171-185.

Olson, M. (1982), *The Rise and Decline of Nations*, Yale University Press, New Haven.

Ortiz, S. and Aparicio, S. (2006), "Management response to the demands of global fresh fruit markets: rewarding harvesters with financial incentives", *Journal of Development Studies*, Vol. 42 No. 3, pp. 446-468.

Petrecolla, D. (2016), *Estudio sobre las Condiciones de Competencia en el Sector Lechero de la República Argentina*, Ministerio de Agroindustria, Buenos Aires, available at: https://www.ocla.org.ar/contents/news/details/10013004-estudio-sobre-las-condiciones-de-competencia-en-el-sector-lechero-de-la-republic.

Piore, M.J. and Sabel, C.F. (1984), *The Second Industrial Divide: Possibilities for Prosperity*, Basic Books, New York.

Ploper, L.D., Fadda, G. and Olea, I. (2009), *En el Mañana Hoy: Un Recorrido por los Cien Años de Innovaciones Tecnológicas de la Estación Experimental Agroindustrial Obispo Colombres (EEAOC)*, Estación Experimental Agroindustrial Obispo Colombres, San Miguel de Tucumán.

Porter, M.E. (1990), *The Competitive Advantage of Nations*, Free Press, New York.

Reardon, T. and Flores, L. (2006), "Customized competitiveness" strategies for horticultural exporters–Central America focus with lessons from and for other regions", *Food Policy*, Vol. 31 No. 6, pp. 483-503.

Reardon, T., Barrett, C.B., Berdegué, J.A. and Swinnen, J.F. (2009), "Agrifood industry transformation and small farmers in developing countries", *World Development*, Vol. 37 No. 11, pp. 1717-1727.

Sánchez, G., Butler, I. and Rozemberg, R. (2011), "*Productive Development Policies in Argentina*", IDB Publications (Working papers), Inter-American Development Bank, Washington, DC.

Sabel, C.F. and Jordan, L. (2015), *Doing, Learning, Being: Some Lessons Learned from Malaysia's National Transformation Program*, World Bank, Washington, DC.

Schulz, K., Staubach, C. and Blome, S. (2017), "African and classical swine fever: similarities, differences and epidemiological consequences", *Veterinary Research*, Vol. 48 No. 84, pp. 1-13.

SENASA (2019), *Situación de la Producción Orgánica en la Argentina Durante el año 2018*, Servicio Nacional de Sanidad y Calidad Agroalimentaria, Buenos Aires, available at: https://www.argentina.gob.ar/sites/default/files/situacion_de_la_po_en_la_argentina_2018.pdf.

USDA (2020), *Citrus: World Markets and Trade*, United States Department of Agriculture. Foreign Agricultural Service, available at: https://downloads.usda.library.cornell.edu/usda-esmis/files/w66343603/gf06gq220/rx914c158/citrus.pdf.

Yin, R.K. (2009), *Case Study Research: Design and Methods*, Sage, London.

Zamora, A.E.B. (2014), "Una propuesta de clasificación tipológica de los exportadores de limón fresco de la provincia de Tucumán (Argentina)", *Estudios Geográficos*, Vol. 75 No. 276, pp. 373-383.

Appendix

The Appendix file for this article can be found online.

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